PALLEN (M.A.)

PRIZE ESSAY.

ON THE

TREATMENT OF CERTAIN UTERINE ABNORMITIES.

BY

MONTROSE A. PALLEN, M. D.,

OF ST. LOUIS, MO.,

PROFESSOR OF THE INSTITUTES OF MEDICINE AND GYNÆCOLOGY IN THE HUMBOLDT MEDICAL COLLEGE.

Empiricism in medicine and surgery is fast giving way to the rationalism of true diagnosis.

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TO

THOMAS ADDIS EMMET, M.D.,

OF NEW YORK,

SURGEON TO THE STATE WOMAN'S HOSPITAL,

This paper is dedicated, as a mark of esteem for him as a man, and as a recognition of his distinguished services in Gynæcology.

PRIZE ESSAY.

ON THE

TREATMENT OF CERTAIN UTERINE ABNORMITIES.

It is proposed in this essay to explain the rationale of the treatment of certain uterine abnormities, discovered by unerring methods of diagnosis, and which are now being understood as clearly as physical exploration can demonstrate.

For years the profession, generally, has neglected to properly appreciate uterine pathology, classing many local with constitutional causes, and treating numerous complaints in an altogether irrational and empirical manner. It is hoped to prove the error of such, by presenting facts of a type character.

The frequency of uterine misplacements, and the inefficient methods adopted for their cure, induce us to seek elsewhere than the realms of *constitutionalism* for a treatment of success as absolute as that of ophthalmology, or of the diseases revealed by laryngoscopy; and, a surgical local treatment thus far gives an out-cropping, indicating a mine of wealth beneath.

MENSTRUATION IRREGULAR IN ITS CHARACTER IS ALWAYS COINCIDENT WITH UTERINE DISEASE.

ALL UTERINE ABNORMITIES TEND TO A DEFORMITY OF THE ORGAN, EITHER IN ITS NECK, OR ITS BODY, OR BOTH.

Menstruation, irregular in its character, is always coincident with uterine disease; and this proposition is patent when we remember that the healthy functioning of any organism necessitates a healthy condition for its performances. No unhealthy cause can produce natural effects, therefore, from a uterus at all abnormal, can no healthy menstrual flux proceed.

All uterine diseases are abnormities which vary, more or less

the shape and size of the organ, and consequently are displacements in a greater or less degree, or, they tend towards displacement.

This proposition may appear somewhat vague, but dysmenorrhœa, menorrhagia, endocervicitis, and endometritis, are purely symptomatic of a mechanical local lesion, remediable by local treatment, and which results from the deposit of some neoplasm, foreign to the normal tissues of the uterus, and are only found when such heterologous conditions exist.

The normal shape and size of the uterus being preserved, there can never exist any abnormity, and to prove this fact, certain type conditions as productive of disease will be treated.

Until the discovery of Sims's speculum (or perineal retractor) and his and Simpson's methods of examination proceeded with, we were not altogether certain of our diagnosis. But now we can bare the uterus to sight and to the touch, and reasoning by exclusion renders clear all that is necessary to be known. Sims's position for the patient, viz., on the hands and knees, or in the left lateral semi-prone one, and a perineal retractor, a tenaculum, a uterine probe, sponge tents, and the bi-manual palpation per vaginam (and per rectum), and in the hypogastric region, are prerequisite for correctness and absolute certainty in diagnosis.

IRREGULAR MENSTRUATION PAINFUL IN ITS CHARACTER.

This condition is always the result of an obstruction of the canal of the cervix: it may be at the os externum, the os internum, or both; it may exist from a turgescent thickened mucous membrane, or it may arise from a strictured canal, the result of a hypertrophic and general *fibroid symmetrically interstitial* condition of the cervix and body, or it may come from anteversion and anteflexion, or either, or retroversion and retroflexion, or either; or it may be the consequence of the presence of a fibroid tumor, intra-mural or subperitoneal or sessile in its character. Many of these conditions are sometimes found to exist together, and are easily recognized as productive of each other.

The most frequent condition in painful menstruation is the SYMMETRICALLY INTERSTITIAL FIBROID; and which always accompanies the others, if it do not exist alone.

Distinct fibroid and fibrous tumors, according to the most reliable observers, exist in about twenty per cent. of all uterine diseases, polypi and polypoid growths being excluded from the statistics

which increase them much more. Prof. A. K. Gardner, of New York, states that all negro women over forty years of age, as far as he observed, have such growths in the uterus. Now, if such tumors of a distinct character and form exist so frequently in the uterus, it must have some special adaptability to their formation. It is probably explicable by the fact that menstruation is the analogue of parturition, and that after parturition, the organ undergoes rapid metamorphosis to and from fatty degeneration, by and through the fibrinous and corpuscular products of inflammation. If, in this regressive metamorphosis, there is an arrest in the replacement of affected tissue by a new production, after the absorption of the fatty material, the degenerate uterine tissue, instead of being muscular, is wholly or partly fibroid, and the condition then is, what we venture to call the *symmetrically interstitial fibroid.* Touch and sight reveal under these circumstances one or two conditions of the cervix, the *glans* shaped (Plate II.), from its resemblance to the glans penis of a youth with a small os, or the *mushroom* shaped (Plate III.), presenting a strictured appearance from the intravaginal junction downwards, having sometimes a small os, and sometimes quite a large one.

The mushroom neck, as far as I have observed, always coexists with flexion at or about the internal os. In both the *glans and mushroom necks* there invariably exists endocervicitis alone, or in connection with it there is also follicular endometritis confined to the mucous membrane alone (rarely), or extending to the tissue of the organ.

Whether uterine disease originates or not in the canal of the cervix, or of the body, certainly the first manifestations of disease come from them, even if the only lesion appreciable be a small fibroid, situated outside its body and subperitoneal. Such a condition provokes a derangement either in the length or axis of the canal, by an obstruction of circulation, or simply by gravitation. These tumors and their effects will be more fully described farther on.

General hypertrophy of the uterus (Plate II.) so frequently accompanies the glans neck that, as far as my observation goes, the absence of such a condition is a rarity. As an example of this, I extract from my case-book the history of the patient and her treatment, a lateral bisection of whose uterus is here figured (Fig. 2) as accurately as the probe, the touch per vaginam, per rectum, and the bimanual palpation could determine. This lady, aged thirty-two years, had had, prior to 1859-60, three miscarriages rapidly following each

other; the first one evidently the result of secondary syphilis in the father, the others from that cause coadded to uterine disease. For six years there had been no conception, and painful menstruation had existed in a greater or less degree during the whole time. Ulceration of the cervix, about and within the os, had been cured by as many physicians seven times, and each time reappearing within a period of from two to five months subsequent to her last preceding attack. The amount of medicines, principally iodides of mercury and potassium, and preparations of colchicum, taken by this lady is almost incredible, and the number of tortures inflicted by various shaped and sized specula, the applications of nitrate of silver, caustic potassa, Vienna paste, and local washes, to cure the leucorrhœa, and reduce the inflammation, were horrible, and the patient was in despair.

The history of the case, its subjective phenomena, and the repeated failures towards cure, or even amelioration, were enough to arouse suspicion that the painful menstruation was the result of a mechanical obstruction, and that the other symptoms, viz., leucorrhœa, inflammation and ulceration, were but consequences. Placing the patient on her back, the touch per vaginam and bi-manual palpation revealed the glans neck and general hypertrophy of the whole organ, which were verified when Sims's speculum and the uterine probe were used. Cicatricial contractions, the result of caustics, were plainly visible all over the cervix. The ulceration of former years did not exist, having just been subjected to a course of *potassa cum calce*, but there was a viscid tenacious mucopurulent discharge constantly forcing its way through an os not larger than a broom straw. She had just ceased menstruating, which had continued for six days, very scanty (the flow being pale in color) and excruciatingly painful for a couple of days preceding, and subsequent to the ushering in of the period. The pain grew less and less, and finally ceased on the last day. This is readily understood when we remember that the whole organ was enlarged, being nearly four inches in length and proportionately wide, the result of the interstitial fibroid deposit, and that the mucous membrane was thickened and congested, the follicles and villi altered in size and texture, their anatomico-pathological conditions absolutely precluding a healthy functioning. Admitting that the menstruation was performed in an altogether natural manner, the narrowed canal, from the internal to the external os (scarcely permitting the passage of a very small probe), made the

more so by the turgescence consequent upon the flow, produced the partial damming up of the secretions preceding it, as well as the retained blood after it commenced; which, if not causing uterine contractions, certainly acted as a foreign body pressing upon the already exquisitely sensitive membrane, and increased the pain without any reference to the hyperæsthesia natural to the cavity during the period. Of course, when the cavity became filled, the further occurrence of the flow tended to increase the pain by causing a dilatation from the internal to the external os, by a species of plugging from above downwards, and which plug (a real foreign body) there rested, until the torpid and almost non-muscular uterus could gather strength to contract with sufficient firmness upon itself, in order to expel its contents. This process usually took about four days in the case referred to, viz., two preceding and two after the appearance of the menses. Notwithstanding the patient was nervous, hydræmic, and sleepless at night, an operation was proposed as the only method offering anything like relief. After its explanation, the bi-lateral section of the cervix and internal os, according to the method of Sims, was gladly accepted by the patient, and performed on the 26th of June, 1866.

The patient was placed in the left lateral semi-prone position (the left parietal bone on a level with the table, and in the axis of the spinal column; the chest rotated so that the sternum was under, the left arm flexed on the back, the thighs well flexed upon the abdomen—the right more so than the left—and all clothing loosened), a Sims speculum was introduced, and the perineum retracted, which revealed the whole of the vaginal cavity, the cervix lying almost if not quite at right angles to it. An assistant then retained the speculum *in situ*, when the anterior lip was hooked up by a tenaculum, and a section of each side of the cervix was rapidly made, by a single cut each with the scissors, almost to the vaginal insertion; a modified Sims uterotome (Plate VII.) was then set at an angle of about 140°, and a division made on each side of the internal os, commencing about a quarter of an inch above it, and terminating in the angles of each of the wounds made by the scissors. The hemorrhage was but slight, scarcely more than an ounce, and easily checked by the application of soft sponges (very small, not larger than a bullet) wrung out in iced-water. A plug of cotton, first wrung out in water, then saturated in glycerined persulphate of iron (three parts of glycerine to one of iron), was then introduced up into the cavity, beyond the internal os, and a

similar application made to the cervical wounds, and the whole packed into a cup-shaped pledget of cotton, saturated with glycerine, and the cavity tamponed with dry cotton to the external orifice. *This tamponing of the vagina after* ALL *the uterine operations is beneficial in two ways. Firstly, it precludes all danger of hemorrhage; and, secondly, it retains the glyceroled pledgets* in situ, *which act in a double manner, in the promotion of absorption by compression, and by capillary drainage by osmosis, a very peculiar action of glycerine first noticed by Sims.* On the second day afterwards, all the dressings were removed save the glyceroled iron pledgets within the os and in the sections—the patient, of course, being placed in the left lateral semi-prone position. On the fifth day, these pledgets were separated by suppuration and came away (any attempt to pull them away invariably provokes hemorrhage), when a sound was carried up into the cavity, and the cuts reopened. The bleeding was but slight, and a plug of glycerole cotton reinserted immediately checked it. This procedure, together with the application of glycerole cotton around the cervix, was continued every alternate day, until the next menstrual period, which came on without pain or inconvenience, and was copious, but not profuse, continuing until the fifth day. On the second or third day after the cessation of the menses, commenced a portion of the treatment which is absolutely necessary to a complete cure, the importance of which has been recognized and dwelt upon by Dr. Thomas Addis Emmet, in his able paper on anteflexion, &c., and read by him before the New York Obstetrical Society. There always exists in uterine disease more or less of endometritis, particularly of a follicular character, the presence of which undoubtedly is one of the great causes which provokes irregular menstruation of a painful character. It is well to remember that the object of the operation is to increase the size of the canal of the cervix, and that subsequent openings by the sound and *the keeping of the wounds patulous* with the cotton plugs, until cicatrization takes place by the granulating process, equally tend to promote the permanence of the result. This having been accomplished, of course, the mechanical obstruction to the flow being removed, the dysmenorrhœa ceases, and probably the follicular endometritis would also abate, because the pent-up acrid secretions are likewise permitted to freely escape, but as this internal inflammatory condition originally was the cause of the attack, it might induce another unless conception should take place.

This result is not always to be obtained, as virgins are thus fre-

quently affected, and with them the removal of the cause is always necessary. To surely accomplish this result in all cases we have recourse to the application of chromic acid (equal parts of acid and water) to the lining membrane, which is applied by means of a small bit of cotton (first saturated with water) wrapped on a flexible silver wire probe, and which is passed into the cavity, and swept around so as to apply the acid to the entire membrane. The glycerole cotton dressings should be daily applied for the period of eight days, followed by the tincture of iodine (applied as was the chromic acid), with another eight days of glycerole cotton, and then another application of chromic acid. Before the end of the next eight days, the menstrual flow comes on and sometimes so profusely as to occasion alarm upon the part of the patient. Should this abundant flow be so great as to excite any apprehension on the part of the surgeon, a well applied tampon of cotton generally checks it, but if this should be inefficient, the application of a solution of chloride of iron (or of the persulphate) to the lining membrane invariably checks it.

From the second appearance of menses, after the operation, usually dates the period of cure. With regard to the use of chromic acid, a large experience warrants the statement that it is unrivalled as an application, producing none of the bad effects of nitrate of silver, or caustic potassa, or chloride of zinc, or any other caustic usually applied to the cervix, to the canal, or to the cavity. As above stated, the cure usually dates from the second menstrual flow, because the chromic acid has not only changed the character of the follicular endometritis or endocervicitis, but in all probability has totally denuded the organ of its epithelial lining. Hence the profuse flow at the second menstrual period, which in itself is a great relief to the hæmostasis of the chronically inflamed body. Now the orifice and the canal being sufficiently enlarged for a proper exit of the menstrual flow, and of the accumulated acrid secretions, and a prevention of the farther formation of these secretions, the result of the application of the chromic acid, it may be said that the cure is complete, and only by means of mechanico-surgical appliances. It is well to state here that, during the whole of the treatment by the chromic acid, iodine, and glycerole cotton, the frequent bathing of the neck of the womb in hot water is a most valuable adjuvant. Dr. Emmet recommends syringing by a nurse, but as a suitable one cannot always be obtained, a simple apparatus has been devised by the writer, which consists of a vessel either of

glass, or tin, or earthenware, capable of holding one or two gallons, to which is attached an India-rubber tube four or five feet in length, with a straight vaginal pipe. The patient lying on her back without the least difficulty can thus not only syringe the vagina, but also bathe the neck in hot water, because the posterior cul-de-sac, from her position, is inclined towards the hollow of the sacrum, and if the rectum be not loaded with feces, several ounces of the fluid are thus brought in constant contact with the entire surface. The use of such an apparatus precludes the numerous inconveniences of syringing by the ordinary method, which are caused by the position of the patient in squatting over a basin: by doing so, the weight of the superincumbent viscera, and the centralization of muscular action towards the uterine region, force the uterus towards the outlet, thereby preventing a thorough application of the fluid, and sometimes giving great pain by the impinging of the pipe upon the neck, in its unsteady movements in the vagina.

Versions and flexions of the uterus are among the most frequent of causes in the production of irregular menstruation of a painful character.

Version without flexion in a greater or less degree is rarely met with, in fact such a condition has never existed *absolutely* in any case I have seen, unless it were due to the presence of a fibroid either in or on the body of the uterus, and which caused the misplacement by mere force of gravity.

Anteflexion and retroflexion of the body upon the neck, or *vice versa*, are dependent upon many causes: THE CHIEF *of which is a neoplastic deposit about the internal os*, together with a general *interstitial fibroid condition of the neck*, which is nearly always of the mushroom shape type.

The presence of tumors of a distinct character coincident with, and as productive of these deformities, will be considered farther on. One great fact in the history of these flexions is, that the trouble can be dated from some abortion, miscarriage, or delivery, in the female who has had sexual congress, and in the virgin from a certain period of menstruation, sometimes from its very incipiency.

With virgins this condition is readily understood, when we bear in mind that *menstruation is the analogue of parturition*, being nothing more nor less than a "little labor," for the reason, that at each menstrual flux there is a casting off of the epithelial scales,

and sometimes a complete denudation of the lining membrane of the uterus. It is not probable, that this membranous decadence could take place without certain changes ensuing in the structure proper to the uterus itself, no line of demarcation being presumable, because of the intimate relationship by and through the adjacent connective tissue and intervening bloodvessels.

To properly elucidate this point, and to understand the data upon which such propositions are based, let us examine into the nature of the menstrual flux. What is menstruation? After a careful examination of the whole subject I believe it to be a discharge of blood from an *hypertrophied lining membrane of the uterus, analogous to that which is found in the puerperal state.*

It is well known that when the fecundated ovule is deposited in the uterus, there is a thickened condition of its lining membrane, a swelling of the tubular glands, and of the capillary vessels ramifying in the glandular interspaces, and that this membrane thus changed is now ready to furnish nutrition for the development of the ovum.

Nature in all her acts does nothing by sudden leaps. There is a steady and gradual advancement in all her steps.

The uterus at the age of puberty takes on a series of changes, by which it is prepared to nourish the fecundated ovule, if such be conveyed into its cavity. But if there be no fecundation, then menstruation occurs to relieve the highly congested membrane, and even the membrane itself is sometimes discharged, as has been witnessed by Handfield Jones, Tyler Smith, Sir James Simpson, and others; and this process is again renewed, and menstruation again occurs, unless conception interferes with it, and then the fluids of this membrane go to the nutrition of the embryo and its membranes. The exudation of blood is then due to the breaking up of the mucous structure, and the time indicated in this periodical decadence and renewal of the mucous membrane represents the menstrual period. This is believed to be the correct doctrine, and for more than twenty years past has been taught from the obstetrical chair of the St. Louis Medical College, by Prof. M. M. Pallen. On this basis, and from certain changes undergone in the uterus after parturition, complete and incomplete, and as I believe also after each menstruation, it is proposed to examine the frequency of flexions of the uterus.

Dr. Emmet states that in nearly all cases of anteflexion the seat of stricture, or the *knuckling*, has undergone a fatty degeneration. I think the fatty degeneration, in a greater or less degree, to be the cause of such.

After parturition, certain physiological changes take place, which have been thoroughly demonstrated by Heschl, Franz Kilian, Rainey, and Virchow, and also observed by Dr. Robert Barnes, Dr. Druitt, and Dr. Priestly.

The uterus is principally composed of fusiform cells, embryonic, with a central nucleus about $\frac{1}{4000}$ of an inch in diameter, and somewhat greater in length. As soon as fecundation has occurred, these cells elongate "by growth at each extremity, the nucleus remaining in the middle portion of the filament." By the time that parturition takes place, these cells have increased in length from seven to eleven times more than their normal size, and in width from two to five times, and *pari passu* with their growth, there is a new generation of cells principally in the middle and inner muscular layers, and occasionally on the external layer.

In the first months of pregnancy there is great activity of fibre formation, which is believed to cease altogether after the sixth month, at which time nothing more is developed but embryonic cells. At full term, therefore, we meet with colossal fibre cells alone. The uterine ligaments also increase in size from the muscular fibres contained in them, and which are intimately blended with those of the uterus.

After labor has taken place, there is no longer any need for these colossal cells, and, in a short time, from a weight of twenty-four ounces the uterus diminishes to an ounce and a half. Tyler Smith, who quotes from West, and all of the above-named authors, states that this necessary involution of the uterus is chiefly affected by atrophy and fatty degeneration of the colossal muscular fibres, * * * and the internal SURFACE OF THE UTERUS ITSELF.

The whole uterus becomes soft; it is difficult to insulate individual fibre cells from their *excessive friability*, and they are found to be *studded with oily particles in their interior.*

Dr. Priestly, in his *Lectures on the Gravid Uterus*, p. 103, states that he has occasionally seen, at the post-mortem examination of women who have previously borne children, "the uterine tissue affected by fatty degeneration, and so soft and friable that a sound passed into the uterine cavity during life, as a means of diagnosis, might have readily been pushed quite through the uterine walls, unless the greatest care were exercised in its manipulation." Now, believing that menstruation is the analogue of labor, and knowing that the uterus, after parturition, undergoes involution by atrophy and fatty degeneration, we have the clue to, if not the explanation of, the fre-

quency of uterine flexions. Owing to the weakened state of that organ after either of the processes of menstruation or labor, any cause, such as the superincumbent viscera, a distended bladder or rectum, a fall, tenesmus, or even coition, may induce a bending of the body on the neck, or *vice versa*, and that the presence of oil globules in its tissue prevents its erectility or contractility: besides, a more lowly organized structure having taken the place of the original proper muscular tissue, it lacks the peculiar motility to such, and the flexion being induced must, of necessity, remain. At each menstrual flow, if in the virgin, the flexion increases; and in the child-bearing women, having been great from the beginning, increases more so, unless a fortunate pregnancy should supervene, which arouses the latent energies of the lower structure, and urges it onwards to the life-structure of the parturient uterus.

When conception fails or cannot be looked for, art intervenes, and to explain this art process, is the task undertaken in the remarks to follow on the treatment of uterine flexions. As somewhat pertinent to the question, I state, *en passant*, that very few fat women menstruate healthily, and without pain, and for the reasons that fat is abundantly deposited in the uterus, and that flexions generally exist with them in a greater or less degree.

After a careful survey of Sims's and Emmet's operations for anteflexion both mechanico-anatomically and physiologico-pathologically, and reasoning upon some operations which were performed as indicated by them, where the *interstitial fibroid deposit* remained in the neck of the uterus, notwithstanding the rectification of the axis of the canal, it struck me that in many cases the sections had been insufficient.

The *mushroom* neck continuing, the process of evolution is in a measure arrested, and in virgins[1] in whom conception is not an anticipated sequitur, the original trouble is apt, sooner or later, to return, fortunately, however, never in so severe a form. To overcome this difficulty, an *antero-posterior bisection* of the neck, with a quadrilateral or rectangular division of the *internal* os was tried, and the results in nineteen cases, fourteen for anteflexion and five for retroflexion, have proved the correctness of the presupposed theory.

These operations are but the converse of each other, and will be detailed farther on.

[1] The term virgin is used synonymously with a non-child-bearing female.

Whether fatty degeneration be the cause of flexions or not, they evidently belong to the class of muscle-neoplasms (of which strabismus is the type), and may not be inaptly called clubfoot of the uterus. In strabismus, the complete rectification of the eye is never accomplished save upon a division of the opposed muscular fibres, and in clubfoot the divided tendons must be so maintained by certain opposing forces which control their action.

Furthermore, the diathesis is changed for the same reasons that a diathesis, such as that of stone formation in the bladder, is frequently overcome by lithotomy, which is not a *post hoc propter hoc*, but a veritable removal of cause by attack upon effect, explicable by a principle of reversed reflex action. So, too, in these uterine sections, two or rather three sets of muscular fibres are negatived in their action, viz., the contracted longitudinal ones on the side of flexion, the relaxed longitudinal bending upon the flexed ones, and the circular ones in the cervix. Cicatrization in all three acts simultaneously in contrary directions, and to the same ends. The division of the knuckle at the flexion goes through the fatty degeneration, and the inert muscular tissue, and tends to produce the necessary relaxations; whereas, the divided longitudinal relaxed ones, under the stimulus of cicatrization, are contracted, and in so doing pull, as it were, the flexed fatty degenerate fibres into their proper place. Of course, we cannot expect any such result to take place unless the circular fibres of the neck are also divided, which furthermore excites the longitudinal fibres to contraction. This division of the neck also promotes the absorption of the interstitial fibroid deposit above mentioned. Sims, Baker Brown, Barnes, Greenhalgh, and others greatly rely upon simple sections of the neck to promote absorption throughout the whole of the uterus. Emmet evidently has advanced more towards a complete success, by his method of dividing the knuckling at the internal os, than any one else; and experience has taught me that a duplication of his sections in the cervix, and a quadrupling of them at the internal os, is the most certain of all, particularly where conception cannot be anticipated either as a proximate or remote result. The objections urged by Tilt, Savage, and others in Great Britain, and by my distinguished friend Dr. Storer, Sr.,[1] of Boston, against these operations evidently must be abandoned, since hemorrhage ought not (and never

[1] Since the above was written, I have learned that Dr. Storer has materially changed his views, and now recognizes the advantages of uterine sections in many cases.

does) to occur in such profuseness as to occasion alarm upon the part of the surgeon (and should it so do would rather be the result of carelessness than otherwise). Besides, it is a physical impossibility for anything save a small probe to pass the internal os, much less a sponge tent; and when time, and pain, and certainty of *permanent* success are matters of consideration, the superiority of rapid and local cutting has been demonstrated by experience, which is greater than the tenets of ancient dogmas, even if surrounded by the glory of venerable medicine, and wrapped in the mantles of departed greatness.

One thing must be recollected in these cases, which is, *that no section of the uterus is ever advisable if there has been any previous pelvic cellulitis.*

In the earlier operations which I performed for the relief of uterine-flexions, I was chary of the use of scissors and knife, and, as a consequence, some of these were not as rapidly and completely cured as were the later ones; but since the bisections of the cervix, and the rectangular divisions of the internal os were inaugurated, certainly there has been nothing to complain of in the way of success. To say that the operations are always successful is simply preposterous, but that they offer a readier, quicker, and more certain beneficial result than any other heretofore devised plan, is unquestionably true as far as my experience goes. Simpson, Barnes, Greenhalgh, and Baker Brown in Great Britain, together with Sims and Emmet of this country, have done enough, by their respective methods, to convince a large proportion of the profession of the philosophy and feasibility of these sections of the womb, and I have a faint hope that my efforts may induce many of the unbelievers, that their dangers and difficulties have not only been overrated, but that a species of heroic cutting is perfectly easy, and seldom fraught with evil consequences. In fact, save in patients who had been previously suffering from pelvic cellulitis, and whose conditions were extreme, I have never seen any bad results, and in those who had been so troubled, none of the symptoms so much dreaded by Tilt, Savage, and others, have ever been manifest. In some instances, success is not obtained, yet the failures are relatively much less frequent than by sponge tents and cauterization, and as for pain, the comparison is not to be entertained for a single instant.

It should be borne in mind, that no discovery ever yet was universally accepted, particularly by those whose preconceived notions were antagonistic to its theory, and whose prejudices precluded an honest trial of its practice.

ANTEFLEXION WITH OR WITHOUT ANTEVERSION.

Sims's method of dividing the posterior lip of the external os, and the cervix up to the internal os, in the hopes of a fruitful deposit of the semen, was very well as far as it went, but as Emmet correctly discovered, this was not sufficient: something more was requisite, as conception did not always occur in the married, and was not to be expected in the unmarried, therefore, he (Emmet) bethought himself of a most philosophical operation, which in his hands has been all that is requisite. My method is but a continuation of his principle on a more extended plan, and which offers probably more uniformity of certainty of success.

What then is anteflexion of the uterus?

It is a bending of the body forwards upon the neck, the latter being in its normal position; or, it is a bending of the neck forwards upon the body, this latter being in its normal position; or, both neck and body may be bent forwards, as illustrated in Fig. 3, all of which are but degrees of one and the same thing. This condition existing, the patient suffers more or less with endocervicitis, endometritis, hypertrophy of body, induration and enlargement of the neck (mushroom shape and interstitial fibroid deposit), painful menstruation, distressing and acrid leucorrhœa, and sterility, with all their concomitant physiological derangements, and consequent pathological disturbances.

Emmet's idea, that phthisis pulmonalis is frequently developed by anteflexions is true, and equally patent in retroflexions, from the fact that uterine troubles invariably beget gastric derangements, and which of necessity, prevent histogenetic digestion to be successfully accomplished, and when the tubercular diathesis exists, the almost invariable sequence is the development of tuberculosis.

The operation for the rectification of anteflexion, consists of a series of sections whereby the axis of the uterus is brought to its normal position; and is performed as follows:—

The patient is placed in the left lateral semi-prone position, the perineum retracted by a Sims speculum, and held by an assistant, who also elevates the right nates, when the neck of the uterus is seized by a tenaculum, and rapidly divided with the scissors to the insertion of the vagina, both anteriorly and posteriorly. The bleeding is then checked by pressing the small wet (cold) sponges well in the cuts, when a flexible block tin sound is passed by the *posterior* cut margin into the cavity, through the internal os, when the uterotome following the sound as a guide is passed through the

knuckling at the seat of the flexion, and a sufficient opening made as the instrument is withdrawn: again it is passed into the cavity, and each side of the os internum successively divided to such a depth as to sever those fibres of the uterus lying next to the mucous membrane, for the reasons above assigned. A few minutes usually suffice to complete the whole operation, particularly if the bleeding is not copious, which rarely happens.

The divided *knuckling* is kept opened by a pledget of glycerole cotton, as described before in the bi-lateral operation, and the dressings are also the same; the tampon of course being applied for as many days as there exists a probability of hemorrhage. Although Sims does not advise the early passage of the sound after the operation, like Emmet, I have not hesitated to daily enter it after the suppurative process has thrown off the pledget of cotton, introduced to keep open the wounds made at the seat of the flexion, and I have never as yet provoked a bleeding that was at all formidable.

The remarks before made concerning the endocervicitis and endometritis are equally applicable to their treatment in flexions. With regard to retroflexions I have not hesitated to operate as in anteflexions, the difference being that the one is the converse of the other, and that the *knuckling* in the latter is divided from the anterior wound of the cervix. Retroflexion accompanied more or less by retroversion has been always treated by the use of pessaries, and frequently without any benefit whatever. I have therefore operated to straighten the axis of the canal and to cure the dysmenorrhœa, the endometritis and endocervicitis, and not until this has been accomplished to apply the pessary. I would state that a pessary must be fitted, and never worn when it produces the least discomfort. The lighter its structure the better, and as good vulcanite cannot be always easily obtained, I would suggest a tube of *aluminum*, which will not readily oxidize, and which is very light. With regard to the shape, the best rule is first to mould one of block tin softened with lead, until it is completely adapted to the cavity, and then to have the vulcanite or aluminum made exactly like it. I invariably have a depression of considerable size made in the anterior margin, sufficient to envelop the urethra, and not to press upon it. The instruments used are such as have been recommended by Sims, and are a combination of Hodge's and Meigs's in shape.

A reference to my note-book would detail interesting cases successfully treated in this wise, but the limited space of any essay of this character precludes a relation of them.

Where these flexions are complicated with versions, usually from the presence of intramural fibroids, the result of the treatment is not so satisfactory, unless the tumors are absorbed in consequence of a division of the neck, as contended for by Mr. Baker Brown, or are further stimulated to absorption by a section through them as done in a case to be described (Fig. E, Plate VI.), or from shortening of the anterior wall of the vagina in order that conception would ensue, and thus do away with the tumor as described by Sims.[1]

When, as above stated, we cannot anticipate conception, then we have to deal with the conditions as we find them, and this leads to the consideration of tumors as productive of uterine displacement. All tumors of the uterus cause its displacement in a greater or less degree. Thus, a small fibroid situated in the fundus, as it inclines anteriorly or posteriorly will tilt the uterus in either direction; and, it will decidedly produce anteversion or retroversion as it may be deposited in the anterior or posterior wall, from gravitation alone. The converse, however, holds true if the fibroid be attached to the cervix, from the fact that the tumor acts like a splint upon the flexible and usually slender neck, and as it finds a base of support in the bladder if it be anterior, it retroverts or retroflects the body; and, if it be posterior, the utero-sacral ligaments, the rectum, and the Douglas cul-de-sac, oppose its downward pressure, and the result is anteversion or anteflexion. To the philosophical mind of Sims are we indebted for this ingenious rationale. However, as the tumors increase in size, and are lifted from the cavity of the pelvis, their volume and weight incline them (unless they meet with bony resistance) to anteversion and flexion; or, retroversion and flexion, as the case may be.

As to the methods of diagnosing tumors peculiar to the uterus, so much has been done by Sir J. Simpson, Sims, Baker Brown, Greenhalgh, Barnes, and Savage, that their discussion would be out of place, even if the limit of this essay permitted it. Sometimes, however, when the sponge-tent, the usual uterine probe, the vaginal and rectal touch, and the bi-manual palpation have failed to absolutely characterize the seat and nature of the tumor, I have in certain forms of doubtful intramural and sessile tumors,

[1] Clinical Notes on Uterine Surgery, by J. Marion Sims, M. D., etc. London, 1866, p. 253 et seq.

resorted to the use of a block tin sound (softened by the addition of lead), which is introduced gently and carefully into the cavity of the uterus, the patient being in the left lateral semi-prone position, and the cervix steadied by a tenaculum (the perineum of course being retracted by Sims's speculum or by my modification).

When the instrument has reached its extreme depth, the speculum and tenaculum are withdrawn, and as the left hand of the operator steadies the sound in its position, his right hand grasps the tumor through the abdominal walls, while the patient rolls herself over on her back.

This manœuvre being accomplished, the uterus falls back into the position it usually occupies, and the flexible sound adapts itself to the sinuosities of the canal. In fact, the touch per vaginam, per rectum, and over the abdominal walls will at once determine if the tumor be in the anterior or posterior wall of the uterus, as it thus rests upon the sound. If it be in the posterior wall, the sound may be traced through the anterior uterine and abdominal walls, which does not obtain, if the tumor be situated anteriorly, as the canal is relatively thrown back towards the sacrum and rectum. The patient is then replaced in the left lateral semi-prone position, the speculum reintroduced, and the uterus again steadied by the tenaculum in its cervix, and by the operator's hand over the abdominal parietes, and the sound gently withdrawn: the same care being taken, as if a bougie were being drawn from the urethra of the male. Usually the sound preserves the irregularities of the uterine canal, and by it, the exact size, seat, and shape of the tumor are correctly estimated. An illustration (Plate V.) will readily explain its use, and my case-book contains notes of a very interesting case showing its value as a means of diagnosis. Mrs. X., aged about 30, miscarried in the third month of pregnancy, and from that time until four months afterwards, she noticed a gradual swelling of the hypogastric region, and had been subject to repeated hemorrhages which were rapidly undermining her strength. She was anæmic, with a general tendency to hydræmia. The attending physician called in a distinguished accoucheur, who at once diagnosed uterine tumor, and who without difficulty passed a Simpson's sound to a depth of five inches.

The question now arose as to the character of the tumor. On the next day I saw the case, and there was marked anteversion (apparent), the Douglas cul-de-sac filled with a mass either attached

to the uterus, or it was the organ itself very much hypertrophied: all of which was movable.

Evidently it was not a fibrous polypus in the cavity with a small peduncle; it hardly could have been one with a broad peduncle: it therefore was not a sub-peritoneal tumor and extra uterine, for such rarely gives rise to hemorrhage, and seldom increases the length of the cavity.

It must have been either an interstitial fibroid or a sessile submucous one.

Why was it not a polypus with a small pedicle? From the fact, that the general hypertrophy of the whole organ, its irregular shape, the apparent anteversion, and the bulk in the Douglass cul-de-sac, are not usually symptomatic of polypus; and the same objections held, though in a less degree, to its being one with a broad base of attachment. Therefore as it probably was not fibrous polypus invading the cavity, or a sub-peritoneal and extramural fibroid, it must have been intramural or sessile submucous.

The sponge-tent was to reveal the whole trouble, when I introduced the block-tin sound, somewhat curved upon itself, in order to overcome the apparent flexion and anteversion.

The result was manifest immediately upon the withdrawal of the probe: it had so completely moulded itself to the canal, that it presented the appearance figured in the annexed drawing (Plate V.), clearly demonstrating, that the tumor was a sessile submucous one, situated in the supra-vaginal posterior neck, and extending up into the cavity for several inches. Intramural and interstitial tumors rarely, if ever, present any irregularity of surface outline, but are, as a generality, more or less symmetrical: whereas, sessile ones present an irregular surface from the fact that their growth is greatest in the direction of the least resistance, viz., from the uterine tissue towards the mucous membrane, and they follow, in a measure, the course of the cavity.

The same rule holds good with them, however, as pertains to all uterine tumors, which is, that the organ grows almost *pari passu* with the neoplasm. Intramural tumors are unusually rounded and symmetrical, from the fact, that the growth of the neoplasms meets with a resistance equally on all sides.

It is not always that we are consulted to overcome the sterile condition; in fact, such advice is usually sought in exceptional cases, and many unmarried females are the victims of uterine diseases. Therefore, frequently it is not a case of sterility which is to be over-

come, but it is one involving life; and even if it be not of such a serious nature, the getting rid of the tumor is a relief to great suffering.

The fact that the presence of tumors in or on the uterus is the occasion of greater or less displacement, is so patent, that the farther discussion of the question would be out of place.

The methods of treatment are palliative and radical. Any *modus operandi* by which the exhausting hemorrhages and great pain attending the presence of uterine tumors are gotten rid of, and which does not comprise a complete removal, either by knife or the ecraseur, is palliative; and this embraces conception and delivery, and the various injections into the uterine cavity of a solution of the salts of iron, of potassium, or of tincture of iodine.

I do not propose to consider each method separately, but to cursorily examine into their relative merits. In 1853, Dr. Washington L. Atlee, under the form of a Prize Essay, presented to the American Medical Association, startled the profession by his methods of heroically attacking uterine tumors with the knife, so as to permit the introduction of atmospheric air into them, and thereby to promote their disintegration by what is called *eremacausis*, and at the same time he induced contractions of the uterus by enormous doses of the ergot of rye, in hopes of their expulsion being facilitated by the action of that drug.

His successes were numerous, and the ingenuity of his devices are deserving of the highest commendation. Since the publication of Dr. Atlee's Essay, advancements have been made in uterine diagnosis, and consequently great strides made towards a less hazardous operation than that of *eremacausis* and enucleation, with its attendant dangers of immediate death by shock, or later by septicæmia, resulting from pyæmic absorption, or toxæmia the consequence of the absorption of putrilage.

I therefore think that Dr. Atlee's method is to be applied only as a last resort, and when we have failed in all others. The successes which have most generally attended the injections of tincture of iodine, or solution of the chloride of iron, by Routh, Savage, Greenhalgh, and Sims, and the absence of danger following their use, have inclined me strongly in their favor.

The method of Mr. Baker Brown of mutilation has sometimes to be tried. The principle that a division of the circular fibres of the neck promotes an absorption of tumors situated in the body, by inducing a contraction of the longitudinal fibres, is correct as

far as it goes, but the main advantage obtained, is from an adhesive inflammation set up as a result of the sections, and the same reasons hold good with regard to the injections of iron or iodine.

In nearly, if not all, the distressing menorrhagia is done away with, and in many the entire obliteration of the tumor is followed by a single injection. I can fully indorse Savage's recommendation of dilating the internal os with a sponge-tent before the injection, because it permits an easy egress of the fluid; and, if this precaution be not used, a facile and non-hazardous operation becomes frightful from the dangers of uterine colic, which, beyond all comparison, is one of the most painful of all the ills to which women are heir.

The above generalities concerning uterine tumors are necessary only in so far as they exist as causes of disease of themselves; but, sometimes these neoplasms are but the concomitants of other affections, and their removal is only a secondary matter. Sometimes a tumor is situated upon the anterior superior portion of the fundus, as detailed by Sims above quoted, and the anteversion is relieved by a shortening of the vagina, and the axis of the uterus being thrown into its proper position, thereby facilitating conception, which in turn produces absorption of the tumor, and this condition constitutes a case of secondary importance in regard to uterine abnormities, it being not a matter of life and death, or even of health and comfort. However, cases do exist where tumors are so situated, notwithstanding they are but concomitants, that a cure of version or flexion cannot be made unless they are gotten rid of, and these are specially applicable to the unmarried, where we cannot expect conception as even a proximate or remote method of cure. I have seen many such, and will present one in detail, although it occurred in a married woman, but who could never expect conception from the fact that for several years she had ceased menstruating, and labored under a condition of an analogous character to dysmenorrhœa, which was one of *painful leucorrhœa.* This lady, some years previous to my seeing her, had suffered from an acute attack of ovaritis and metritis, and her menstruation thereafter became scanty, irregular as to period, and painful, and so continued for about a year. At the expiration of this period, regularly every month, in obedience to the laws of ovarian excitement, this poor sufferer would undergo the most excruciating agonies for several days, and instead of blood flowing, there was a discharge of sero-

mucus which gradually became of a muco-purulent nature, which is so characteristic of chronic endometritis and endocervicitis.

After the lapse of the second year, the monthly excitements gradually wore away, and by the beginning of the third year there was a constant leucorrhœa (utorrhœa proper) with more or less pain.

Sometimes, however, the pain presented the usual agonies of her former dysmenorrhœa, and from the same causes. When I first saw her she was growing fat, and had been bedridden for eight months, was pale, had little or no appetite, the pulse feeble and *feathery*, and the general appearance was one of atony. The uterus could scarcely be felt through the abdominal walls, and the neck, to the touch, revealed the usual hard mushroom-shaped feel so peculiar to all cases of flexions.

There was an enlargement in the vesico-uterine region, and an equally great swelling in the cul-de-sac of Douglas, therefore, I was undecided as to whether it was *ante* or *retro*-flexion.

Upon placing the patient in the left lateral semi-prone position, a small probe was passed into the cavity, and a marked anteversion with flexion was discovered, and the introduction of the finger into the rectum traced out a tumor about the size of a walnut, situated in the posterior wall of the supra-vaginal portion of the cervix. (Plate VI.) As this was one of my earlier operations, I was at a loss as to the method of proceeding, but acted, however, on the plan that the canal was to be enlarged in order to permit a free flow of the accumulated excretions, the result of the endometritis, but what to do with the tumor I hardly knew. Should an analogous case now present itself, I would treat it exactly in the same manner with this difference, I would make an antero-posterior bisection instead of a bi-lateral one, which was performed, notwithstanding the result was as favorable as any one might desire.

When the internal os had been thoroughly divided on all sides, rectangularly, sufficient to permit the passage of the left index finger into the cavity, the tumor was distinctly palpable, and with an assistant to steady the neck of the womb by a tenaculum, I passed the right finger into the rectum and moved the tumor between the two fingers without the least difficulty.

The question now arose as to the treatment of the fibroid, whether to attempt an enucleation then and there or simply to divide the capsule, and trust to the expulsive or absorbent powers of the uterus towards the promotion of its disappearance. However,

after a few minutes' delay, I determined to split it open with the uterotome (Plate VII.), which was no easy matter, as it creaked under the knife like a raw potato, and required some considerable force in its performance. The result of the whole of the sections through the cervix and the internal os were as gratifying as possible, for after the usual glycerole cotton and chromic acid subsequent treatment, the uterus, previously 3⅞ inches in length, was reduced to about its normal length, and in a few weeks the utorrhœa ceased.

At the present writing, some eight months after the operation, the patient is in the enjoyment of tolerable health, performing her usual household duties with comfort, and perfectly free from pain.

Under the head of tumors of the uterus, it were proper to say something of the malignant variety. Cancerous growths (so called) have been so frequently found in the womb, that it has almost been looked upon as a seat of election for the deposit of the malign neoplasm. Without discussing the propriety of the removal of true cancer from any tissue, I incline to the belief that many tumors, benign of themselves, have been permitted to kill the patient in rather a negative way from the mischief and trouble engendered to surrounding structures, and from the hemorrhages usually attendant upon their presence.

I doubt not but what many fibroids, from interference in the circulation of the uterus, have determined a greater or less amount of ulceration of the cervix, and that, together with the bleeding from the mucous lining of the entire organ, have caused the abandonment of many a poor sufferer to her fate; and when her spark of life had been extinguished, the cry of "cancer" was the flattering unction which the ignorant practitioner laid to his conscience. When tumors are found, whether benign or malignant, no effort should be relaxed which offers the least hope.

Diagnosis thus far does not yield us certainty in defining the lines of demarcation, and if a simple fibroid produces death from its mechanical results, it is equally as malignant as if it were encephaloid. Probably the day is not far distant when it will be shown that there are but few absolutely malignant growths, whose reappearance is but the forerunner of a fatal termination, and the late results in the successful treatment of (so called) cancer by bromine and arsenic tend to prove the non-identity of certain forms of heterologous neoplasms, hitherto deemed as belonging to the malignant group.

It were inopportune to dwell any longer upon this department of uterine abnormities, from the fact that the same general rule applies equally to them as to the benign, viz., that no operation for their removal should ever be undertaken unless there is a reasonable hope of the success of immediate surgical interference, and, like Spencer Wells and Baker Brown, who so strenuously advise a systemic preparation previous to ovariotomy, so too would I insist upon a similar one in all cases of operative proceedings about the genito-urinary apparatus, particularly about the uterus, on account of their intimate reflex connections with the pneumogastric and great sympathetic systems. Fatal embolism from shock has been known to occur from simple handling of the womb, and how much greater the danger when operative interference is necessitated; and as success is the general rule after most surgical operations without systemic preparation, is it not infinitely preferable to endeavor to insure still greater success by a rational system of previous hygiene as applied both to body and mind?

It is well to make this distinction, that foreign growths in the uterus render it and its entire connection peculiarly hypersensitive with regard to shock and systemic depression, to which flexions and versions of themselves seem to be peculiarly adverse.

In the preceding remarks I have endeavored to be as concise as possible, as the limits of an essay are necessarily circumscribed and the repetition of cases will not farther adduce more evidence.

The correctness of a principle is not demonstrated by profuseness, but, like wit, has soul by its brevity.

I believe that the facts presented have not been based upon false premises, and that future experience, that touch-stone of the truth of our art, will prove that the views here presented are generalizations worthy the consideration of its followers.

ADDENDA.

Self-Sustaining Speculum. (Plate VIII., Fig. 1.)

The great advantages of Sims's speculum are so patent, that any remarks concerning it are entirely out of place, but as a competent assistant to hold the instrument (in private practice) is not always to be obtained, and although many ladies are willing that several

assistants should be present during an operation, yet in the necessary frequent examinations afterwards, they object to their presence.

Appreciating this difficulty, I devised the instrument represented in the figure.

Several other instruments have been made by various surgeons, yet for simplicity and readiness of adaptation I find that mine answers all purposes.

None of them, however, equals Sims's if held by the proper assistant. The instrument consists of *A*, the dorsal supporting fenestra; *C*, the double curved shank fitting in *H*, the vaginal sheath-shank, fastened by screw *B*; *D*, thumb-screw, working upon universal ratchet screw *F*, which elevates or depresses at will; *E*, the blade, *G*, the alæ, which prevent the instrument from slipping into the vagina.

The instrument being separated as much as possible by working the screw *D*, is inserted as is Sims's speculum, when *E*, the blade, becomes a fixed point, and the rotation of the screw *D* brings the dorsal fenestra *A* to the lumbar region.

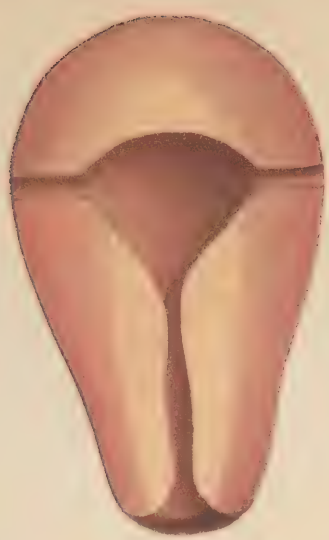
The shank within *H*, the sheath in the figure, is held by the screw *B* at the extreme upper end in the adaptation. Now, when the dorsal fenestra is fixed, and *E*, the blade, having previously been fixed, the pushing of the shank into the sheath necessarily retracts the perineum as much as is required, and which is fixed by the screw *B*. A few turns of the screw *D* adjusts the blade perfectly, as sometimes the Douglas cul-de-sac is too much or not enough elevated. Where patients are very fat a piece of tape is sometimes necessary to hold the fenestra in position, but after one or two applications the patient (when necessary) holds the shank *C* with her left hand.

I rarely ever use any other speculum for uterine examinations whatever may be the nature of the application. If patients remain perfectly quiet, breathe easily, and are well adapted to the left lateral semi-prone position, the whole of the vaginal cavity is exposed, as in Plate VIII., Fig. 2. In most cases, the blade as represented in the figure is used, but for virgins and with women whose vaginæ are very short, I use blades much smaller and shorter.

PLATE I.

A. Lateral section of the normal uterus.

B. Antero-posterior section.


A

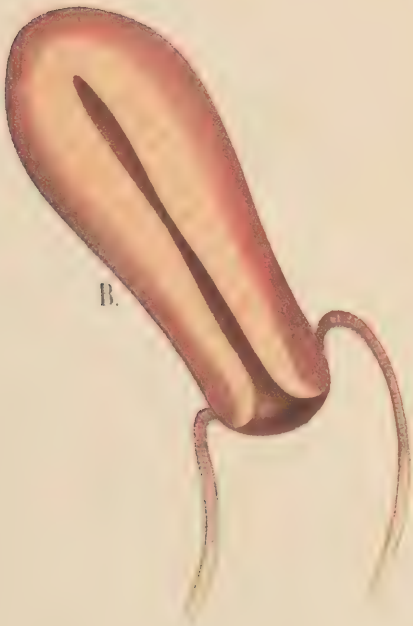

B.

PLATE II.

Lateral section of hypertrophied uterus with *Glans* neck. Length $3\frac{3}{4}$ inches.

A. *a a'*, sections made with scissors. *b b'*, showing those (dotted lines) made from internal os with the uterotome to the scissors-sections.

B. Glans neck as seen by perineal retractor.


A.
b.
b
a.
a
B.

PLATE III.

Complete anteflexion with *mushroom* neck. Length of canal, 3½ inches. Antero-posterior bi-section with division of knuckling, and rectangular sections about the internal os.

C. *a a'*, sections made by scissors.

b b', division of triangular space A, and knuckling.

c c', completion of rectangular sections.

D. Appearance of external os and cervix, as seen by perineal retractor.

D.

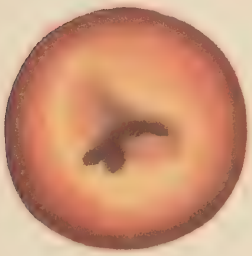


PLATE IV.

Complete retroflexion, with *mushroom-shaped* neck. Length of canal, $2\frac{7}{8}$ inches.

a a' represent sections made with the scissors through intra-vaginal neck.

b represents section through the knuckling made with the uterotome.

c c' indicate the anterior sections also by uterotome; similar incisions were made laterally, and which constitute, together with the division of the knuckling, the rectangular divisions at the internal os.


c
b
a
a'

PLATE V.

Method of diagnosing seat of tumors by block-tin sound.

A. *a*, tumor (fibroid) pressing the sound.

b, posterior wall of the vagina.

c, blade of the speculum.

d, sound curved and bent on itself, and adapted to the irregular sinuosities of the canal.

B. Block-tin sound before its introduction into the cavity.

C. Sound as it appeared when withdrawn, having been moulded to the canal, and indicating seat and size of the fibroid.


B
C
CHARRIERE
27
CHARRIERE
27

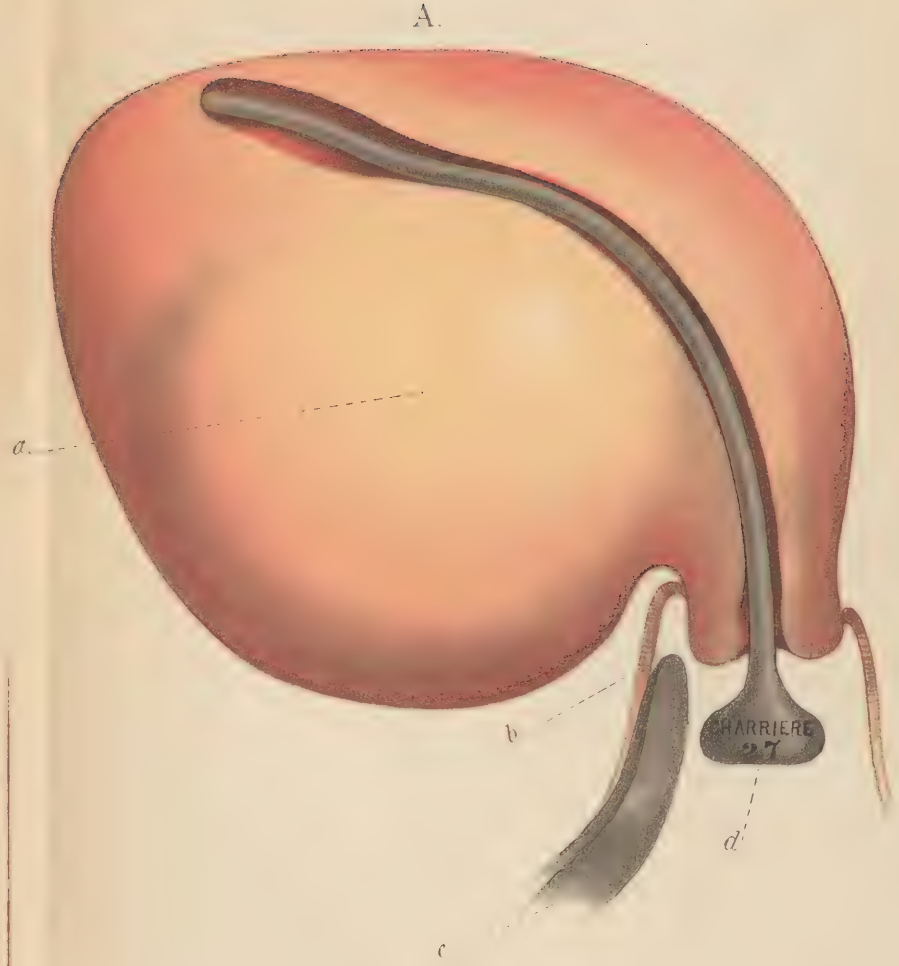

A.
a
b
c
d
CHARRIERE
27

PLATE VI.

Anteversion and anteflexion, with fibroid in posterior wall of supra-vaginal neck. Length of canal, $3\frac{7}{8}$ inches.

E. *a a'*, scissors sections.

b, uterotome sections through knuckling.

c, marking the sweep of the knife through posterior wall and fibroid.

F. Appearance of indurated cervix and elliptical os, as seen by speculum.

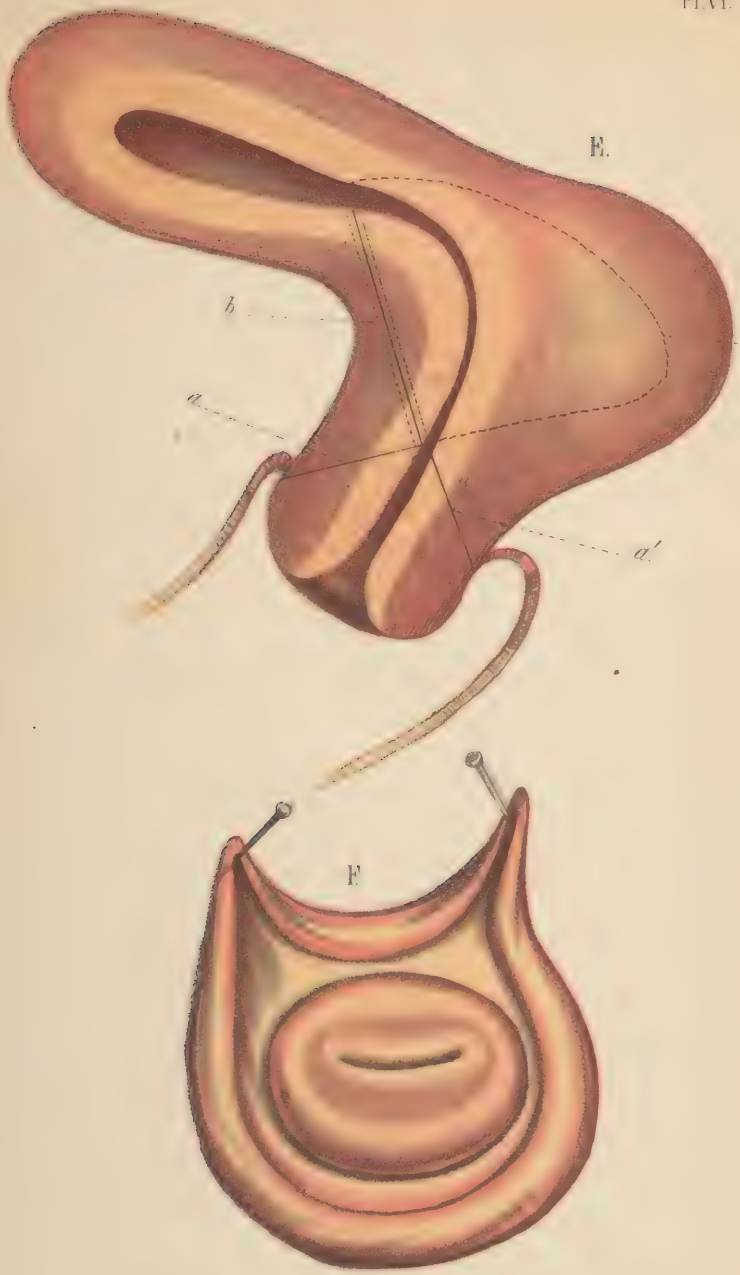
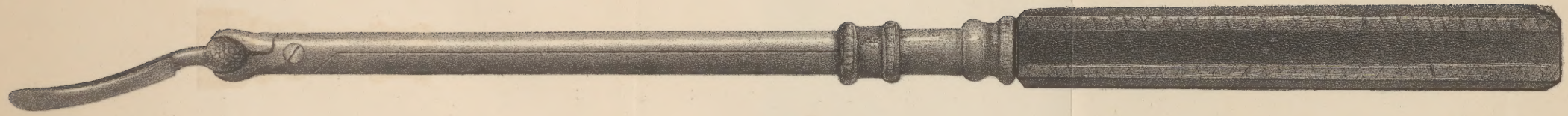

E.
b
c
a
a'
F

PLATE VII.

Modification of Emmet's modification of Sims's uterotome (full size), which consists of Sims's handle and scissors-shanks, with the addition to Emmet's ball and socket joint *of a ratchet to each*, thereby preventing any slipping of the blade, notwithstanding the angle at which it may be set.



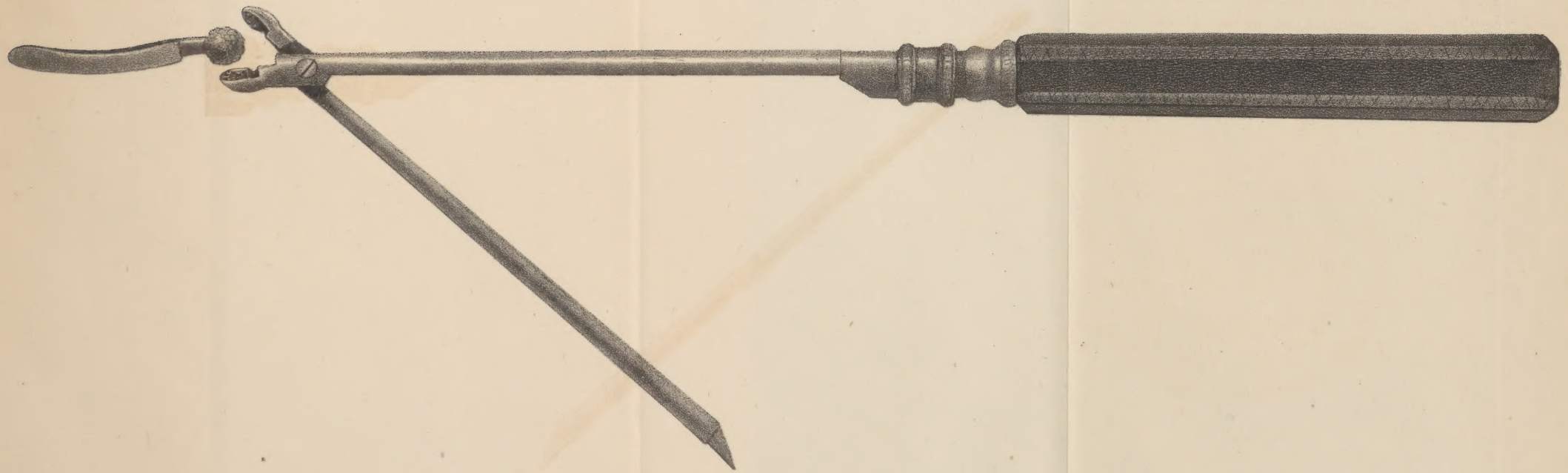


PLATE VIII.

Fig. 1. Self-retaining speculum—full size.

a. Groove in the vaginal portion of the double curved shank, in which the screw B works to retain it *in situ* after the perineum is retracted.

Fig. 2. Instrument as adapted to a patient in the left lateral semi-prone position.

Fig 1.

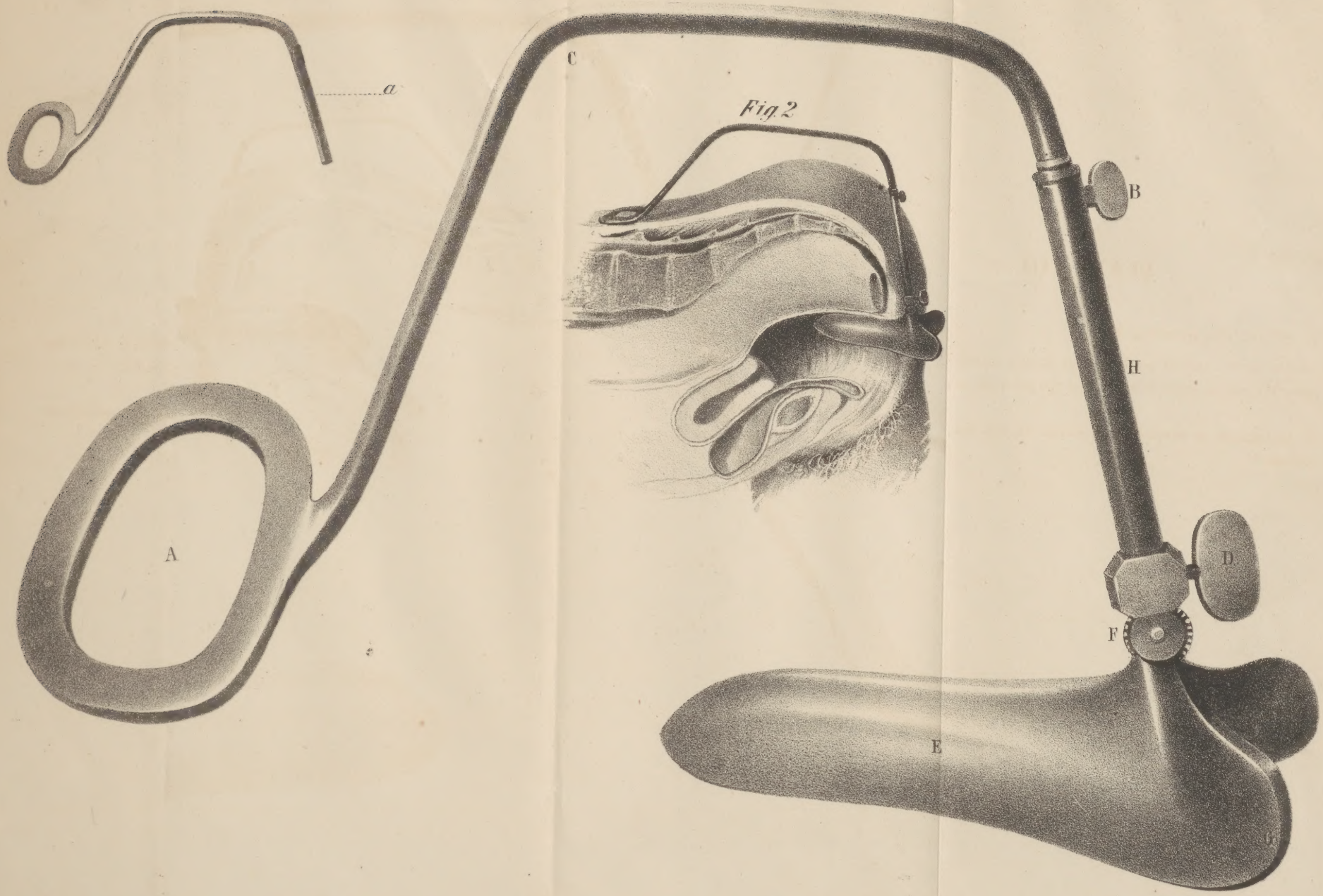


Fig 2